

**Proposed Revisions to the Scope of Work for**

**DEVELOPMENT OF A**

**TOTAL MAXIMUM DAILY LOAD**

**FOR THE ROCK RIVER BASIN (WISCONSIN)**

**Submitted by the Wisconsin Department of Natural Resources**  
**December 15, 2006 DRAFT**

The Wisconsin Department of Natural Resources (Department) proposes the following revisions and clarifications to the original Scope of Work for the Rock River Basin Total Maximum Daily Load (TMDL) Development.

**(1) Selection of Waterbodies**

Within the Rock River Basin, 52 waterbody segments (portions of rivers or lakes) are currently listed as “impaired” by phosphorus or sediment in the Department’s 2006 303(d) list (Table 1). In addition to the water bodies contained on this list, the Department also requests the inclusion of the Crawfish River in this TMDL because of its potential to carry a nutrient and sediment load to downstream waters that are listed as impaired.

**Table 1. Rock River Basin – Phosphorus and/or Sediment Impaired Waters.**

<b>Waterbody</b>	<b>County</b>	<b>Description</b>	<b>Pollutant</b>	<b>Impairment</b>
Alto Creek	Dodge	Mile 0-6.8	SED	Degraded Habitat
Bark River	Waukesha	Mile 35-41	PHOS	Dissolved Oxygen
Battle Creek	Waukesha	Mile 2.1-4.6	SED	Degraded Habitat
Beaver Dam R. (mouth to Reeseville)	Dodge	Mile 0-12	PHOS & SED	Degraded Habitat & Dissolved Oxygen
Blackhawk Creek	Rock	Mile 2-4	SED	Degraded Habitat& Turbidity
Calamus Creek	Dodge	Entire length (Mile 0 - 17)	SED	Degraded Habitat
Casper Creek	Dodge	Mile 0-2	SED	Degraded Habitat
Dead Creek	Dodge	Mile 0-3	SED	Degraded Habitat
East Branch Rock River	Dodge	Hwy 67 downstream to confluence w/ West Branch	PHOS & SED	Degraded Habitat & Dissolved Oxygen
Flynn Creek	Washington	Mile 0-6	SED	Degraded Habitat
Fox Lake	Dodge	Lake	PHOS & SED	Degraded Habitat, Eutrophication, Fish Kills
Gill Creek	Dodge	Mile 0-6	PHOS & SED	Degraded Habitat
Horicon Marsh	Dodge		PHOS & SED	Degraded Habitat; Dissolved Oxygen
Irish Creek	Dodge	Mile 0-3	PHOS & SED	Degraded Habitat
Johnson Creek	Jefferson	Entire length (Mile 0-17.5)	SED	Degraded Habitat
Kohlsville River	Washington	Mile 0-9	SED	Degraded Habitat
Kummel Creek	Dodge	Mile 0-11.54	PHOS & SED	Degraded Habitat
Kummel Creek	Dodge	Mile 11.54 -18	PHOS & SED	Degraded Habitat
Lake Koshkonong	Jefferson, Rock, Dane	Lake	PHOS & SED	Dissolved Oxygen; Eutrophication, & Degraded Habitat
Lau Creek	Dodge	Entire length	SED	Degraded Habitat

		(Mile 0 - 6)		
Limestone Creek	Dodge	Mile 0-1.2	SED	Degraded Habitat
Markham Creek	Rock	Mile 0-5	SED	Degraded Habitat
Mason Creek	Dodge, Waukesha	Mile 0-5.2	PHOS & SED	Degraded Habitat; Dissolved Oxygen, & Temperature
Mauneshia River (above Marshall)	Dane	Mile 13.5-32	PHOS & SED	Degraded Habitat & Dissolved Oxygen
Mauneshia River (Crawford to Waterloo)	Jefferson	Mile 0-5.4	PHOS & SED	Degraded Habitat & Dissolved Oxygen
Mauneshia River (Waterloo to Marshall)	Dane	Mile 5.4-13.5	PHOS & SED	Degraded Habitat & Dissolved Oxygen
Mud Creek	Dodge	Mile 0-10	SED	Degraded Habitat
Nine Springs Creek	Dane	Mile 0-6.0	PHOS & SED	DO; temperature
Park Creek	Dodge	Mile 0-3	SED	Degraded Habitat
Pheasant Branch Creek	Dane	Entire length	PHOS & SED	Degraded Habitat & Dissolved Oxygen
Rock R. (above Sinnissippi)	Dodge	Mile 285-294	SED	Degraded Habitat
Rock R. (Ashippun to Sinnissippi)	Dodge	Mile 258-281	SED	Degraded Habitat
Rock R. (Watertown to confl. w/ Ashippun)	Jefferson	Mile 238-258	SED	Degraded Habitat
Rock River (above HWY 14)	Rock	Mile 184.4 -190.6	PHOS & SED	Dissolved Oxygen & Sediment
Rock River (Janesville to Hwy 14)	Rock	Mile 176.4 -184.4	PHOS & SED	Dissolved Oxygen & Sediment
Rock River (State line to Janesville WWTP)	Rock	Mile 164.4-176.4	PHOS & SED	Dissolved Oxygen & Sediment
Rock River (Watertown to Lake Koshkonong)	Jefferson	Mile 191-238	PHOS	Dissolved Oxygen & Eutrophication
Schultz Creek	Dodge	Mile 0-5	SED	Degraded Habitat
Sinnissippi Lake	Dodge	Mile 281-285	PHOS & SED	Eutrophication
South Branch Rock R.	Fond du Lac	Mile 3-20	PHOS & SED	Dissolved Oxygen & Sediment
South Branch Rock River	Dodge	Mile 0-3	PHOS & SED	Degraded Habitat & Dissolved Oxygen
Spring (Dorn) Creek	Dane	Mile 1.0-6.0	SED	Degraded Habitat & Temperature
Spring Creek	Jefferson	Mile 0-5	PHOS & SED	Degraded Habitat & Temperature
Steel Brook	Jefferson	Jefferson/Walworth County line to Bluff Rd.	PHOS & SED	Degraded Habitat & Dissolved Oxygen, & Temperature
Stevens Creek	Rock	Mile 0-8	SED	Degraded Habitat
Stony Brook	Dane, Jefferson, Dodge	Entire length (Mile 0 - 15)	SED	Degraded Habitat
Turtle Creek (Comus to County Line)	Walworth	Mile 24.5-32.5	PHOS	Dissolved Oxygen
Wayne Creek	Washington	Mile 3.1-4.5	SED	Degraded Habitat
West Branch Rock River	Dodge, Fond du Lac	Entire length (Mile 0 - 39)	PHOS & SED	Degraded Habitat
Yahara R. (Badfish C. Rock River)	Rock	Mile 0-8.7	PHOS & SED	Degraded Habitat & Dissolved Oxygen
Yahara R. (Badfish C. to Stoughton)	Dane	Mile 8.7-18.7	PHOS & SED	Degraded Habitat & Dissolved Oxygen
Yahara R. (Stoughton to L. Kegonsa)	Dane	Mile 18.7-27.7	PHOS & SED	Degraded Habitat & Dissolved Oxygen

To comprehensively address all impairments in the Rock River Basin related to phosphorus and sediment, the TMDL should evaluate all water bodies included in Table 1. However, the Department recognizes that final selection of water bodies must be based on existing 2000 model output and format, available monitoring data, and U.S. EPA budget constraints. Should constraints preclude the comprehensive evaluation of all waters in Table 1, the Department recommends ranking waters to be prioritized for TMDL development. In general, the ranking shown in Table 2 prioritizes waters impaired in part by phosphorus. Waters listed only for sediment are a second priority, and impoundments are recommended as a third priority even if phosphorus is a pollutant listed on the 303(d) list. Recommendation of impoundments as a third priority is related to some uncertainties about how to use water quality response data to establish nutrient reduction target values for waters that may invariably act like a river and/or a lake. Further, it is possible that new or other types of models than those used previously to study the Rock River Basin may be needed to evaluate a resource like the Horicon Marsh.

**Table 2. Wisconsin Department of Natural Resources Priority Recommendations for TMDL Development.**

<i><b>First Priority</b></i> Pollutant: Phosphorus & Sediment	<i><b>Second Priority</b></i> Pollutant: Sediment Only	<i><b>Third Priority</b></i> Impoundments
Bark River	Alto Creek	Lake Koshkonong
Beaver Dam River	Battle Creek	Sinnissippi Lake
Crawfish River *	Blackhawk Creek	Horicon Marsh
East Branch Rock River	Calamus Creek	Fox Lake
Gill Creek	Casper Creek	
Irish Creek	Dorn Creek	
Kummel Creek	Flynn Creek	
Mason Creek	Johnson Creek	
Mauneshia River	Kohlsville River	
Nine Springs Creek	Lau Creek	
Pheasant Branch	Limestone Creek	
Rock River (main stem)	Markham Creek	
South Branch of Rock River	Mud Creek	
Spring Creek	Park Creek	
Steel Brook Creek	Schultze Creek	
Turtle Creek	Stevens Creek	
West Branch of Rock River	Stony Brook	
Yahara River	Wayne Creek	

\* Not currently listed on 303(d) List for phosphorus or sediment.

## **(2) Water Quality Target Values and Sensitivity Analysis:**

The Department recommends that each of the phosphorus impaired waters be assigned to one of two categories with an ambient phosphorus target value as the water quality goal. Specific waters along with the phosphorus target values are proposed in Table 3. In addition to the target value, the Department proposes an upper and lower value be considered to allow for a sensitivity analysis on the impacts of achieving phosphorus reduction of varying degrees.

For larger, low gradient streams rivers and impoundments, which can generally be classified as non-wadeable, a water quality target value of 0.125 mg/l for phosphorus is proposed. For sensitivity analysis, the Department proposes that additional values of 0.10 mg/l and 0.15 mg/l be analyzed at four proposed points corresponding with previous monitoring efforts from the 2000 Rock River Project. These points include three on the Rock River and one on the Yahara River near its confluence with the Rock River.

For moderate gradient and headwater streams, generally characterized as wadeable, a water quality target value of 0.08 mg/l for phosphorus is proposed. For sensitivity analysis, the Department proposes additional values of 0.06 mg/l and 0.10 mg/l to be analyzed for the Pheasant Branch and Kummel Creek Watersheds.

**Table 3: Proposed phosphorus target values for phosphorus impaired waters in the Rock River Basin.**

<b>Waterbody</b>	<b>Description</b>	<b>Phosphorus Target (mg/l)</b>
Bark River	Mile 35-41	0.08
Beaver Dam River (mouth to Reeseville)	Mile 0-12	0.125
East Branch Rock River	Hwy 67 downstream to confluence w/ West Branch	0.125
Fox Lake	Lake	0.125
Gill Creek	Mile 0-6	0.08
Horicon Marsh		0.125
Irish Creek	Mile 0-3	0.08
Kummel Creek	Mile 0-11.54	0.08
Kummel Creek	Mile 11.54 -18	0.08
Lake Koshkonong	Lake	0.125
Mason Creek	Mile 0-5.2	0.08
Mauneshia River (above Marshall)	Mile 13.5-32	0.125
Mauneshia River (Crawford to Waterloo)	Mile 0-5.4	0.125
Mauneshia River (Waterloo to Marshall)	Mile 5.4-13.5	0.125
Nine Springs Creek	Mile 0-6.0	0.08
Pheasant Branch Creek	Entire length	0.08
Rock River (above HWY 14)	Mile 184.4 -190.6	0.125
Rock River (Janesville to Hwy 14)	Mile 176.4 -184.4	0.125
Rock River (State line to Janesville WWTP)	Mile 164.4-176.4	0.125
Rock River (Watertown to L. Koshkonong)	Mile 191-238	0.125
Sinnissippi Lake	Mile 281-285	0.125
South Branch Rock R.	Mile 3-20	0.125
South Branch Rock River	Mile 0-3	0.125
Spring Creek	Mile 0-5	0.08
Steel Brook	Jefferson/Walworth Co. line to Bluff Rd.	0.08
Turtle Creek (Comus to County Line)	Mile 24.5-32.5	0.08
West Branch Rock River	Entire length (Mile 0 - 39)	0.125
Yahara River (Badfish Creek Rock River)	Mile 0-8.7	0.125
Yahara River (Badfish Creek to Stoughton)	Mile 8.7-18.7	0.125
Yahara River (Stoughton to Lake Kegonsa)	Mile 18.7-27.7	0.125
Crawfish River	Entire Length	0.125

For water bodies with sediment as the pollutant, the Department proposes that one of two methods be used to establish target values:

- a) The use of a reference watershed approach.
- b) Establish numeric targets based on loading values or in-stream concentrations established from additional monitoring including USGS studies.

### **(3) Data for Analysis:**

The Department will provide the contractors with the following data for use in their analysis:

- a) Updated list of WPDES permits and summary of current discharge limits
- b) Discharge data for POTWs since implementation of NR 217
- c) GIS coverage of POTW Outfalls
- d) Additional monitoring data collected by the Department since 2000
- e) Monitoring Data from 2000 Rock River Partnership study and Modeling data and the model.

The Department also proposes to solicit additional monitoring data that stakeholders may have collected through 2006 to supplement the existing database where possible. Any additional data compiled will also be provided to the contractors.

### **(4) Allocations:**

The Department proposes that the contractors will provide load and waste load allocations based on daily and seasonal variations as compared to the impaired condition and possible future conditions.

The impaired condition shall be set to the years 1998 - 2000 to correspond with the monitoring data available from the previous study and to account for the reductions that occurred as a result of NR 217.

To evaluate growth and future changes in the Rock River Basin the Contractors shall examine:

- a) Diminishing dairy operations and trends toward increasing cash crop rotations.
- b) Possible switch to perennial covers such as switch grass.
- c) Possible increase in continuous corn for the production of ethanol.
- d) The impact of increased urban areas and resulting increases in POTW discharge volumes.

To evaluate the urban component of the waste load allocation for permitted municipalities the Contractors shall either:

- a) Augment and refine the 2000 SWAT predicted urban loads with additional SLAMM model runs to evaluate loads and BMP performance and the use of literature values if needed.
- b) Use actual SLAMM model runs, if available, from the permitted municipalities generated to comply with NR-151 and the Phase II permits. These model runs should include baseline loads and reductions through implementation of NR 151

To evaluate the load allocation, the Contractors shall evaluate the agricultural practices contained in NR 151 and other NPS control options including the evaluation of riparian buffer strips and restorable wetlands.

To evaluate riparian buffers the Contractors shall use the methodology utilized in the Wisconsin Buffer Initiative. Field-scale model SNAP-Plus shall be utilized to determine buffer efficiencies, which will then be applied at the watershed scale. Three different implementation levels shall be analyzed. The Department will provide technical assistance to the Contractors.

To evaluate restorable wetlands, the Department will provide the Contractors with GIS coverages depicting restorable wetlands. The tool developed by the Department to rank and predict pollutant removal through wetland restoration shall be utilized. The Department will provide technical assistance to the Contractors. In the event maps depicting restorable wetlands are not available for all counties, a mutually agreed upon alternative shall be used.

#### **(5) Expanded Public Participation and Technical Meetings:**

The Department proposes expanding the meetings as follows:

- a) Maintain the meeting listed in Section 5 for training and overview to Department staff.
- b) Combine the public meeting in Section 6 and the stakeholder meetings outlined in Section 5. Expand them from a total of three to six meetings consisting of a kick-off meeting (December 12, 2006), two interim meetings, two meetings to share the draft TMDL, and one meeting for the final TMDL.
- c) Monthly to bi-monthly technical advisory meetings with a maximum of 12 meetings to discuss issues at decision points in the development of the TMDL. This advisory panel will consist of a small but yet undetermined group of stakeholders representing agriculture, permitted urban areas, counties, POTWs, and others who can assist in the technical issues and questions that arise during development of the TMDL. These will be open to public observation however active participants will be mutually selected by the Department and stakeholders.

#### **(6) Deliverables:**

Submit items listed in the current EPA contract under Section 7.